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Ecology of Australian algae.—The Yan Yean Reservoir, with an area of 1460 acres and an average depth of 24 feet, furnishes part of the water supply for the city of Melbourne, distant about 25 miles. From regular collections made from its waters for a period of 13 months, WEST¹⁷ has studied the composition, distribution, and periodicity of its phytoplankton and its littoral algal flora. The most striking feature of the plankton is the richness of its desmid flora. The desmids reach their dominance during the warm period, from February to May, and their minimum during the succeeding cold months from June to October. During this cold period the crustaceans are dominant. The absence of the usual blue-green algal element at all times of the year is another noteworthy feature of the plankton.

The littoral algal flora is rich in species, contains many interesting types, and exhibits three rather well marked phases during the year. From November to January, with a rising temperature, there is a dominance of the Oedogoniaceae and Zygnemaceae, with an increasing quantity of the Desmidiaceae; these last reach their climax during the following warm months. The cold months of September and October show very little algal life. Of the 300 or more species of algae collected, 14 species and 11 varieties are described for the first time.—GEO. D. FULLER.

Vegetation of the Kermadec Islands.—From their position midway between New Zealand and the Polynesian Islands, these small islands of volcanic origin and subtropical climate exhibit many features of botanical interest. Sunday Island, the largest of the group, with an area of about 30 sq. km., has been visited by OLIVER,¹⁸ who spent ten months studying the vegetation. An annual rainfall of about 225 cm., well distributed throughout the year, with the mild climate, produces a forest composed entirely of broad-leaved evergreens, with a conspicuous number of epiphytes. Among the tree members of this formation, two endemic tree ferns (*Cyathea*) are conspicuous, attaining a height of 20 m., and appearing as the dominant members of one of the forest associations. The epiphytes are principally filmy and other ferns. Only 12 of the 114 species of vascular plants are endemic, a small proportion when compared with the flora of other isolated Pacific islands, and this fact, along with certain geologic evidence, leads to the conclusion that the islands are not older than the Pliocene. The relationship of their flora with those of New Zealand, Australia, and Polynesia is traced.—GEO. D. FULLER.

Vegetation in the Dovrefjeld.—During a month spent in the upper Driva Valley, the WESTS¹⁹ made an ecological survey of the alpine associations of

¹⁷ WEST, G. S., The algae of the Yan Yean Reservoir, Victoria; a biological and ecological study. Jour. Linn. Soc. **39**:1-88. pls. 6. figs. 10. 1909.

¹⁸ OLIVER, REGINALD B., Vegetation of the Kermadec Islands. Trans. New Zealand Inst. **42**:118-175. pls. 18-33. 1909.

¹⁹ WEST, W. and G. S., Sketches of vegetation at home and abroad V. The ecology of the upper Driva Valley in the Dovrefjeld. New Phytol. **9**:353-374. pls. 3, 4. figs. 23-32. 1910.

the mountain slopes rising from partially cultivated rocky pastures near the river. A belt of woodland occupies the valley slopes up to an altitude of about 3600 feet, the montane forest consisting of *Betula odorata*, reaching a maximum height of 20 feet, with an undergrowth of *Betula nana*, *Juniperus nana*, *Empetrum nigrum*, and various species of *Salix* and *Vaccinium*, together with a rather abundant herbaceous vegetation. The shrubby members of this association persist in the belt of alpine shrubland, which reaches a poorly defined upper limit (4500–4800 ft.) with the disappearance of its most persistent members, *Salix reticulata* and *Betula nana*. Above is a luxuriant alpine lichen association, affording pasture for the reindeer and dotted with a variety of alpine flowers. Among the notes upon the many species examined, the scarcity of *Sphagnum* even in bogs is emphasized, and the results of a study of the variation at different altitudes of the leaves of *Betula nana*, both in size and structure, are recorded.—GEO. D. FULLER.

Parthenogenesis in Bennettites.—In 1894 LIGNIER published an account of the structure and affinities of *Bennettites Morieri*, and now, upon looking over his former preparations, he has come to the conclusion that the species was parthenogenetic.²⁰ The evidence is that the nucellar beak is not perforated or disorganized in any way, but is an absolutely continuous mass of primary tissue, that is, not tissue arising by proliferation and filling a passage-way. The pollen chamber forms within the beak and extends more or less toward its tip, but never reaches the surface, so far as the author's preparations show. This is taken to prove that the observed embryos have developed in the absence of pollen tubes; it is recognized that they may or may not be parthenogenetic in the sense of arising from an unfertilized egg. It is further suggested that the parthenogenetic habit may have been the chief cause of the rapid disappearance of a group that was so flourishing during the Jurassic.—J. M. C.

Permeability.—CZAPEK²¹ has brought together all his work on the effect of the surface tension of the surrounding fluid on the permeability of the Plasmahaut of the plant cell. Reviews²² of preliminary articles have given the main points of this paper. Some evidence is offered that acids have their effect by interfering with the Plasmahaut emulsion. CZAPEK also doubts TRAUBE's conception of osmosis, though his experiments offer little evidence against it. Many more substances were found which produced exosmosis of the cell contents of phanerogams only when their aqueous solutions had a surface tension of 0.68 (or less) of that of water. The Plasmahaut of

²⁰ LIGNIER, O., *Le Bennettites Morieri* (Sap. et Mar.) Lignier se reproduisait probablement par parthénogénèse. Bull. Soc. Bot. France **58**:224–227. 1911.

²¹ CZAPEK, F., Ueber eine Methode zur Bestimmung der Oberflächenspannung der Plasmahaut von Pflanzenzellen. 8vo. pp. iv+86. *figs.* 3. Jena: Gustav Fischer. 1911. M. 2.60.

²² BOT. GAZ. **50**:234. 1910, and **51**:472. 1911.